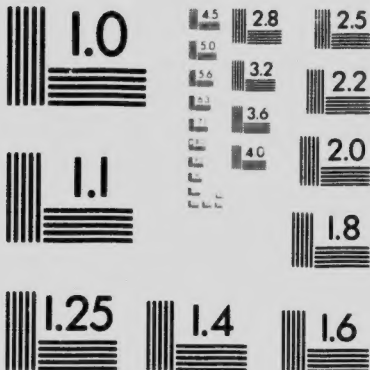


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A CAMPAIGN to PREVENT FIRE



By
FRANKLIN H. WENTWORTH
Secretary of the National Fire
Protection Association

Reprinted from "Industrial Canada"

From an Address delivered to The Canadian
Manufacturers Association in Toronto

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I DO not come to Canadians as a citizen of a foreign nation. I am an American and you are Americans. We are beset by a common enemy; an enemy that is bringing a common impoverishment. That is a shallow sort of patriotism which seeks its own good at the cost of a neighbor people. It is no comfort to the people of the United States that the profits of its lumber industry may be increased by the ravaging of beautiful Canadian forests by fire. There is a new kind of citizenship developed by our modern civilization—the citizenship of the world. It is broader and nobler than mere patriotism, for it recognizes the brotherhood of man, and that no neighboring people can suffer economic loss without making all the world, and every nation in it, so much poorer by that loss.

We have suffered grievously, and are still suffering grievously in the United States from impoverishment by fire waste. Some of us recognize the causes of this impoverishment and the methods by which it may be checked; and as one of these special students I offer you my counsel without money and without price; because you, too, are suffering from this impoverishment, and a comradely word at this time, if heeded, may preserve you from the costly penalties your fellow-Americans in the United States have paid.

The awakening of a people to any great economic fact concerning their public or private welfare is always a matter of profound importance. The recognition by the people of the economic significance of the fire waste has been retarded both in the United States and Canada by an attitude of mind bred by residence in a country of apparently boundless natural resources. Those who are born to great wealth and who accept such an environment without original thought, do not usually realize the sources from which such wealth is drawn until a curtailment of the supply precipitates an investigation. The thought to which the American mind has long been a victim, namely, that our natural resources were unlimited, has resulted in the disregard of our created resources, as well. The great Dominion of Canada has suffered frightfully in the matter of its standing timber. This loss, with slight encouragement from man, Nature herself through the years will attempt to restore. Nature cannot, however, restore the

artificial creations of man; and everything which is made for human comfort by man's creative energy requires a similar and sometimes a greater output of energy for its replacement.

The United States Government Department of Commerce and Labor shows that the average annual per capita fire loss in six European countries is 33 cents while the average per capita loss in the United States is \$3 and in Canada \$3.07. Glasgow has an annual fire loss of \$325,000. Boston, my native city, smaller than Glasgow, has an annual fire loss of \$2,000,000. Berlin has an average fire loss of \$175,000 a year. Chicago, the same size, averages \$5,000,000 annually. The Berlin fire department costs her \$300,000 a year; the Chicago fire department costs \$3,000,000. These figures are sufficiently impressive, but they are not typical of these cities alone; they are typical of the entire United States and Canada as contrasted with Great Britain and the nations of Europe.

What is there in us, in our people, in our character, to explain this? What is the reason for this shameful contrast in the amount of property destroyed by fire? Is the explanation in a sense psychological? I believe it is. We have been born and bred in a country in which our natural resources have seemed unlimited. It is only within the last two or three years that the United States has given any thought whatever to the conservation of its natural resources. But we are now entering upon a new era, and a great deal of attention and thought is being given to this problem.

I think it would be interesting to you to know how we first began to grapple with this problem of fire waste in the United States, because our struggle is a very recent one comparatively. The National Fire Protection Association is only seventeen years old. Twenty-five years ago the fire record of New England was shameful. You know New England is a manufacturing section. We have a great many large factories and an innumerable number of small factories, and the fire record of certain of these properties was so unfavorable that some insurance companies declined to insure them at any premium which might be offered. So a little group of engineers made an inquiry into the origins of these fires and the waste caused by them, and found that about sixty per cent. of these fires could be traced to some specific cause. So these engineers conceived the idea that it was not an impos-

sible proposition to segregate these hazards by putting the particular process of manufacture which was dangerous in a fireproof room, so that when sixty per cent. of fires occurred they might be extinguished in the room in which they originated. In the course of their investigations they also saw that the floor area in many factories was much too great, much greater than the business required; so they conceived the idea of running fire walls at intervals through these properties and protecting the openings with standard fire doors, so that when a fire occurred it might be confined to the section in which it originated. They also recommended that stairways, elevators and belt openings be enclosed. Thus they got the result of dividing these properties into fire sections—vertical fire sections and horizontal fire sections—so that the fire department could extinguish a fire not only in the section in which it occurred, but on the floor in which it occurred. These ideas are so simple—such kindergarten ideas—that one stands in amazement that it should require an engineering investigation to point out such simple fire prevention structural facts. It was because no one had ever thought of fire prevention. It was as if a fire were considered an act of God, with the starting of which it was impious to interfere.

That delightful English essayist, Charles Lamb, tells a story of how they first began to eat roast pig in China. I don't know why they kept pigs there before they ate them, unless it was to annoy their neighbors. Lamb says on one occasion a Chinese country house burned and some pigs were roasted in the fire. The son of the family returning and poking in the embers, got his finger into some of this roast pig, and having tasted it, allowed it was good. He gave a piece of it to his father and to his brother, and it soon spread throughout China that roast pig was a wonderful delicacy. Lamb says that in less than a month country houses began to burn all over China. Before all of China was destroyed, however, a Chinaman with a little larger brain than his fellows discovered that it was not necessary to burn a whole country house to have roast pig. It was that sort of acute and masterful intelligence, brought to bear upon this problem in New England, that began to reduce her profligate waste by fire.

About this time from a very simple idea of a perforated water pipe was evolved the automatic sprinkler—the best fire-

fighting engine yet devised. We have reports of over 10,000 fires in our Association records, and we have not yet had a fire reported which was not either held in check or extinguished by the automatic sprinkler, unless there was something abnormal about the fire, or some fault in the equipment or the water supply. About eighty per cent. of all these 10,000 fires occurring in properties equipped with automatic sprinklers, were extinguished by the operation of ten sprinkler heads or less.

As automatic sprinkler protection came into use the insurance companies began to grant liberal reductions for their installation. But there was then no standard for their installation. The National Fire Protection Association was organized originally for the purpose of making a standard for the automatic sprinkler. In the second year the engineers composing it reconciled their differences and put out a standard.

While they were at work on this standard they discovered there were no standards in the United States for anything relating to fire prevention or protection; there were no standards for electric wiring; no standards for fire hose, hydrants, extinguishers, pumps, or for any of the fire hazards. No one had assumed any responsibility for fire protection nor given any thought to standards which might make fire prevention possible. So it was soon recognized that, although beginning in this small way, we had a much larger responsibility than we had at first supposed; and for seventeen years we have attempted to sustain this responsibility. We have been going on year after year maintaining and revising these standards to which the entire country has long since looked for guidance.

The National Fire Protection Association has members in all walks of life. This fact brings us close to the people and their thought currents. We are engineers and special students of the fire waste, the social and economic results of which are often clearer to us than to the underwriters themselves. It is obvious to us that insurance rates cannot be reduced irrespective of the loss ratio without forcing insurance companies, who mean honestly to pay their losses, to retire. Capital invested in underwriting is not so irrevocably fixed as capital invested in public service corporations using public property or rights-of-way. Such investments can be controlled easily by the state, but capital invested in underwriting can

easily seek other channels and withdraw from the states imposing undesirable burdens upon it; thus leaving the business world without the desired indemnity.

Last year in the United States Legislatures of three States, New York, Illinois and Wisconsin, an investigation was undertaken of the methods and practices of the fire insurance business. This action found its impulse in hostility toward the fire underwriting interests; but all of these investigations developed the fact that scientific or satisfactory underwriting is impossible, and will continue to be impossible, until the criminally careless fire waste of the country is curtailed. It is obvious that these investigations represent an incoherent protest against the frightful impoverishment by the fire tax. The people feel that the fire tax is too high. It is too high! Everybody knows that it is too high. But how can the fire tax be lessened except by attacking the cause of it? This is the question that every representative body must be forced to answer.

The awakening of the American people to a consciousness of their collective responsibility for the fire waste makes the last two years of great significance, especially to that comparatively small body of men who for seventeen years, have devoted their thought to the subject, and who have appealed year after year for the attention of the people respecting it. In spite of the fact that the year promises to be the most disastrous in fire waste since the year of the San Francisco fire, it is yet a year of boundless hope and encouragement. This hope and encouragement lie in the fact that such bodies as the Canadian Manufacturers Association are now turning their attention to this important subject. Our waste of \$3 per capita per annum means that every man, woman and child pays \$3 a year for fire waste. That means that the man with the average family, his wife and three children—a family of five—pays \$15 a year fire tax. The United States Government in its report adds to this fire waste the cost of maintaining fire departments, which is as much more. This means \$30 a year to the average family. Now, if on some blue Monday in every year a representative of the Government were to come around and ask us each for our cheque for \$30 to pay our share of the national carelessness, then we should realize what we pay. But we do not realize that we pay it, because this tax is indirect. The big manufacturers and the big merchants know that this fire expense is a tax. They equip

their premises with automatic sprinklers. They put in protective apparatus. They get the lowest insurance rate they can because it helps them to compete; but the man in the street, the ordinary man, does not know how this fire waste is paid. Take wool, for example. Wool in the warehouse is insured—that is a tax. It is insured in transportation, and there it pays a fire tax. It is insured in the textile factory where it is worked up into cloth. It is insured in the clothing store, insured in the tailor shop, in the department store, and all the way along this fire tax is added to the cost, and when you buy a coat, you pay it. Every stock of goods that is insured carries this tax, and it is passed along to the ultimate consumer. The masses do not know that they pay it. They do not realize that when they buy a hat, or a pair of shoes, or a suit of clothes, or anything which goes through the regular channels of industry, production, distribution and exchange, they pay a tax. Not realizing it, they are indifferent to fire. They think fire does not affect them.

The fire loss in the United States and Canada for the last ten years has averaged \$250,000,000 a year. What could you do with that? You could build roads, build canals, improve your harbors, build battleships—if you have no less mediaeval use for your iron! You could do a great many things with \$250,000,000 a year. What does that mean? That means \$30,000 an hour, \$500 a minute; it means that every ten minutes we are burning the equivalent of a comfortable \$5,000 home. What country can stand a drain like that? Suppose we were to throw into the sea \$250,000,000 in wheat or corn or cotton, or lose \$250,000,000 out of our two national treasuries. Then we would realize that we were being impoverished by this waste. But we have lost the faculty of being moved by an ordinary fire. In Europe a \$100,000 fire shocks the entire country. All the papers in Continental Europe comment on it, wanting to know how it occurred, who was responsible for it, whether the conditions obtaining in the city where it occurred can be found elsewhere, so that such a fire might be duplicated. But here in America, if we take up the morning paper and do not find two or three \$100,000 fires we think nothing has happened.

We are the most careless people with matches on the face of the earth. In Europe, if you want matches you have to go where they are kept. In America matches are everywhere; on our bureaus; in our desk drawers; on the mantle-

piece; library tables; in all our old waistcoat pockets in the closet; if we wake up in the middle of the night and reach out and cannot find a match we feel insulted! Every match is a potential conflagration. There is no reason why any man who loves his family should have any match in the house except the match which lights only on the box. These strike-anywhere matches, if they are dropped on the floor and stepped on, will frequently ignite the skirts of women. This match is particularly dangerous to the child. The child is an imitator. He sees his older brother or his father or mother light a match. That is a dramatic thing; it is going to stick in his mind; he will remember it until he can get hold of one of those little fire sticks and see what he can do with it; and perhaps burn his little body. Every week come to my desk dozens of clippings on this very subject, and it seems to me that my visit to Toronto would be worth while if the gentlemen here to-night who have young children will henceforth have no matches in the house except those which light only on the box.

The fire waste touches the pocket of every man, woman and child in the nation; it strikes as surely but as quietly as indirect taxation; it merges with the cost of everything we eat and drink and wear. The profligate burning every year of \$250,000,000 in the value of the work of men's hands means the inevitable impoverishment of the people. This fearful loss, spread over the entire business world of America, is beginning to manifest its impoverishing blight. The people feel it without yet being awake to its cause. Their awakening is retarded by the prevalence of the foolish notion that the insurance companies pay this colossal tax. But how could they, and remain solvent? They are mere collectors and distributors of that portion of this tax which is represented by their policies. Half of it they never touch; it falls upon the householder direct. San Francisco and Chelsea do not pay for themselves. You in Canada and we in Massachusetts help pay for them. And next year San Francisco and Chelsea, risen from their ashes, may help to pay for your cities and ours. There is one way in which we can escape the periodical paying for one another, and that is for us both to begin rational building construction and then protect what we have builded against fire.

It is the ever present conflagration hazard which makes any approach to scientific underwriting impossible. The

conflagration hazard is not confined to any one province or state. It is present in every province and state and in every city and town in both our countries. We have built largely of wood, and sooner or later we must pay the penalty unless we can find some way in which to protect our cities.

There is a way to solve this conflagration problem—not absolutely, but at least relatively. You cannot be expected to tear down your cities and rebuild them of fire-resisting material; the cities must be protected as they stand. In the heart of nearly every city there are streets crossing at right angles, along which for a very considerable distance are buildings of brick, stone and concrete. This shows a more or less complete Maltese cross of buildings which are not wooden and which operate to divide the wooden-built district into quarter sections, and which might hold a fire in any one of these sections if they were equipped to do so. These brick and stone buildings are ordinarily valueless as fire-stops, because their windows are of thin glass and their window frames of wood. At Baltimore and San Francisco the conflagration attacked such buildings easily, breaking out the panes, consuming the frames, and converting every story of these brick structures into horizontal flues full of combustible contents. Brick and stone buildings are logical and capable fire-stops if the fire can be kept out of them. The small city that will trace out its Maltese cross of such buildings and equip them with metal window frames and wired glass will immediately possess the equivalent of substantial fire walls crossing at right angles in its centre, dividing it into four sections. By such a simple, inexpensive, but yet strategic procedure many a city may save itself from the destruction which now awaits only the right kind of a fire on the right kind of a night.

I have referred in this plan merely to the smaller cities, but it is obvious that this form of protection is equally imperative in the brick, stone and concrete districts of all large cities where great values are housed in close proximity. Fires in the large cities entail an enormous waste because of the great values assembled there. We must come eventually to the equipment of all commercial, factory and office buildings with metal window frames and wired glass. This will mean the abolition of the conflagration hazard in our cities. Fires will then be unit fires, extinguished easily by a competent fire department within the building in which they originate;

for the protection of window openings not only prevents fire from entering, but prevents fire from issuing out of the burning building. We may expect an occasional exceedingly hot fire to break down the defences of an adjoining building, but it is obvious that a conflagration could not get under way among buildings of fire-resistive construction with properly protected window openings.

Having thus fortified city buildings one against the other, extensive fires within individual structures can be prevented by the use of the now well established automatic sprinkler system. The automatic sprinkler applies the water without the help of human agencies while the fire is still incipient. It will operate in a dense smoke as well as in a clear atmosphere. It will not throw excessive deluges of water in wrong places as the fire departments are continually forced to do. With our window openings protected and our buildings equipped with such extinguishers, the conflagration hazard in mercantile districts will be eliminated. There will then remain for consideration our immense residence districts constructed almost wholly of wood surrounding the mercantile centres, like faggots around a funeral pyre. We can lessen the loss here by the abolition of the use of wooden shingles.

The prohibition of the shingle roof, which is now generally recognized as a conflagration breeder, is to-day almost universal within city fire limits, and from the more enlightened communities it is excluded altogether. Burning shingles can be carried great distances by the wind or draught of a conflagration, and when they may alight in their turn upon other dry shingles, they make fearful havoc.

It will not be necessary to remove all shingle roofs immediately. An effective city ordinance might require all roofs constructed in the future to be of incombustible material, and that all roofs which shall hereafter require repair to the extent of one-third of their area shall be replaced with incombustible roofs. The modern shingle is thin, and the machinery which now makes it leaves a fuzzy surface which, after a period of drought, becomes tinder. Without shingle roofs flying brands would be carried over the brick centres of the city by the wind.

Outside of the abolition of the shingle roof, we must look for the protection of our homes to the corrected habits of our people. We must look carefully after the heating apparatus of our homes, giving them the constant and necessary at-

tention demanded by receptacles containing fire. The building of proper flues and chimneys is especially necessary in connection with residences. Then we must have a general revision throughout the country of our building codes. We must stop the building of a certain shoddy class of building and we must limit the height of all buildings. In Boston we limit them to 125 feet. I learn that in Montreal the limit is 130 feet. I hope that Toronto has a limit. It is too late for a limit to be established in New York. New York is no longer a city; New York is a disease! The latest achievement in New York is a building of fifty-five stories. They have recently established a Fire College in New York where firemen from different parts of the country go to study. A couple of firemen from Philadelphia attending this college last week were asked this question: "What would you do with a water tower if a fire broke out in the fifty-fifth story of a building?" One of the Philadelphians looked at the other and said: "We are out of our class; we don't have to fight fire in Heaven in Philadelphia." A friend of mine in New York declares in all sobriety that on Manhattan Island a greater number of people travel greater distances vertically every day than horizontally! If anything like the earthquake in San Francisco were to occur and the people in down-town New York were precipitated into the street they would pile up four deep. However, they declare they are in no danger from earthquake in New York. Their crust is too thick! There is no reason why cities that can expand, and which are not bound by physical barriers should follow the example of New York and erect these absurdly high buildings. They inflict an enormous expense upon the city for fire protection.

There are other matters, however, to which we must give proper thought. Among them is the best use of the fire-fighting agencies which have been established and which are maintained at a great cost by our people.

The mental habits of a people are a vital factor in affecting social progress. It is the mental habit of our people to assume that fire departments are maintained for the exclusive purpose of extinguishing fires. It is obvious, however, that fire departments have large possibilities for service in preventing fires; a service which is, I regret to say, yet largely potential. Every fireman, from the chief engineer down to the drivers and pipe men, should be regularly detailed for inspection service. Three or four hours a week for each man,

going to basements, attics, courts and alleys, keeping down accumulations of rubbish—which spring up over night—locating the storage of inflammable oils and explosives; would keep the city clean of its most persistent fire dangers. Every fireman should in turn cover every section in the course of six months. One would thus check up the inspections of the other, and local conditions would become a matter for educative conversation about headquarters.

There is, however, a most important result to be achieved by such an inspection system over and beyond keeping the city clean; and that is the education of the fire-fighters in the exact physical character of the city. To know exactly which passage ways are open and which are closed; to know which are fire walls and which are not; to have a mental picture of the exposures, the windows, the roof openings, the cornices, and all the other physical details important in fire-fighting, would so heighten the team work of a department that, like expert swordsmen, they could make their thrusts without loss of time straight at the vulnerable part. There are a few cities in the United States where such practice, partially in effect, has already demonstrated its singular efficiency. The citizens of every town and city in the Dominion should demand this sort of service from its fire department.

Then we must begin to place the responsibility upon the individual for fires. It is difficult to do that I know, and yet it can be done. In France, if you have a fire and that fire damages your neighbor's property you have to pay your neighbor's loss. That is very educative! It would be a very good thing if we had such a law in America. We can fix responsibility, however, and we can change our attitude of mind towards the man who has fires. When we look upon the man who has a fire as one who has done an unneighborly thing; as one who is a public offender unless he can prove that he was in no way responsible for that fire; then we will have begun to make headway. We must have inquiry into the causes of all fires, not merely an inquiry into the fire which is suspected to be the work of some incendiary. Nearly every fire is the result of some carelessness; and the careless man must be held up to public criticism as a man who has picked the pockets of the rest of us; because that is what it is in

its last analysis. When we get fire marshals in every state or province who shall inquire into the causes of fires, I believe we will begin to correct our personal habits in respect to the things that cause fires.

The American people are not dull in comprehension, nor are they slow to act once the necessities of a situation are made clear to them. The awakening of the present year manifested by the observance of "Fire Prevention Day" in many of the cities of the United States, by the appointment of fire marshals and the amendment of fire marshal laws; and by the teaching of the fire hazards in many public schools, indicates that we as a people will not much longer tolerate our pitiful impoverishment by fire waste. It is true that so long as our wooden cities stand they must occasionally suffer disastrous fires with, oftentimes, shocking loss of life; but with the growing disposition to hold our citizens personally responsible for their carelessness before the bar of public opinion, many of our most prolific causes of fire will disappear.

Our civilization grows daily more complex. Every man's life is becoming more inextricably linked with the lives of others. An injury to one is increasingly an injury to all. Out of a proper realization of these facts is coming a larger sense of civic responsibility. As citizens of a common country and brothers of a great international family, we may some day evolve a civilization in which there shall be no waste and in which the thought of the common good shall be the profoundest impulse in the hearts of our people.

